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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,080	03/12/2002	D. Dwight Brayton	325.089-US1	7920
34284	7590	03/31/2004	EXAMINER	
ROBERT D. FISH; RUTAN & TUCKER, LLP P.O. BOX 1950 611 ANTON BLVD., 14TH FLOOR COSTA MESA, CA 92628-1950			BARBEE, MANUEL L	
			ART UNIT	PAPER NUMBER
			2857	

DATE MAILED: 03/31/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/936,080

Applicant(s)

BRAYTON ET AL.

Examiner

Manuel L. Barbee

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 6-11 is/are rejected.
- 7) ☒ Claim(s) 2-5, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: There is no brief description for Figure 26 in the specification.

Appropriate correction is required.

Claim Objections

2. Claim 10 is objected to because of the following informalities: In the official copy of the claims, in the application, claim 10 only has 4 lines. When reviewing the PCT application publication upon which this application is based, it appears that claim text after line 4 was inadvertently lost. In a phone conversation with Robert D. Fish on the 11 March 2004, it was confirmed that claim 10 should have substantially the same text found in the PCT. The claim has been examined as if all the claim text is present; however, applicant should submit an amended copy of claim 10 with the full claim text. Appropriate correction is required.
3. Claims 12 and 13 are objected to because of the following informalities: In line 2 of claim 12, delete "HMI", and insert --human machine interface (HMI)--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Miller et al. (US Patent No. 5,079,731).

With regard to providing a control system, with a controller I/O channel and a field I/O channel, to be tested, and providing a test system, as shown in claim 1, Miller et al. teach a process control computer with input/output hardware and a simulator computer for validating the process control computer (Figure 1, process control computer 12, input/output hardware 16, simulator computer 18; Abstract; col. 4, lines 26-54). With regard to coupling the test system to the control system allowing sending and receiving signals via the controller I/O and the field I/O connectors, as shown in claim 1, Miller et al. teach sending control signals from the process control computer to the simulator and receiving signals in response from the simulator (col. 3, lines 9-64).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. in view of Kobayashi et al. (JP 09330118 A).

With regard to providing a simulator coupled to a control system at a sensor input port and an actuator output port, and causing the simulator to apply a signal to the sensor input port and monitor the actuator output port, as shown in claim 6, Miller et al.

teach using a simulator to send simulated sensor data to a process control computer and sending command signals from the process control computer to the simulator (col. 3, lines 9-65). Miller et al. do not teach a connection to data relating to the internal state of the controller, as shown in claim 6. Kobayashi teach monitoring the internal state of control equipment (Abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process control validation method, as taught by Miller et al., to include internal state monitoring, as taught by Kobayashi et al., because then abnormality in the controller would have been available to a maintenance person (Kobayashi et al., Abstract).

With regard to tying into a network used as a communication segment between the controller and the I/O interface, as shown in claim 7, Miller et al. teach connecting to the I/O hardware of the process control computer (col. 3, lines 24-36). With regard to analog/digital converters, as shown in claim 8, Miller et al. teach an analog to digital converter and a digital to analog converter for communication with the simulation system (Fig. 2, ADC 34, DAC 36).

Miller et al. do not teach connecting a point allowing the controller to report its internal state, as shown in claims 7 and 9. Kobayashi teach monitoring the internal state of control equipment (Abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process control validation method, as taught by Miller et al., to include internal state monitoring, as taught by Kobayashi et al., because then abnormality in the controller would have been available to a maintenance person (Kobayashi et al., Abstract).

8. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. in view of Hinds et al. (US Patent No. 5,751,941) and Kawahara (JP 06282311 A).

With regard to a plurality of I/O simulators with one or more A/D converters coupled to a configurator, a communication channel connecting the configurator network to a control system and coupling field I/O connectors of a simulator to a control system to be tested, Miller et al. teach using a simulator to send simulated sensor data to a process control computer and sending command signals from the process control computer to the simulator (col. 3, lines 9-65; Fig. 1). Miller et al. do not teach that the configurator has software for entering and maintaining one or more databases including validation requirements and associated test procedures with one or more tests with one or more signals to be generated by the simulator and transmitted to the control system, as shown in claim 10. Hinds et al. teach a framework for testing software and configuring the test software (col. 1, line 63 - col. 2, line 59). Kawahara teaches a process simulating means that includes a simulating function database (Abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process control validation method, as taught by Miller et al., to include a framework for testing software, as taught by Hinds et al., because then the testing environment would have been more flexible (Hinds et al., col. 1, lines 25-40). It would further have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process control validation method, as taught by Miller

et al., to include a simulation function database, as taught by Kawahara, because then tests would have been stored in an easily retrievable manner.

With regard storing data on a plurality of plant sensors identifying a range of signals and a series of signals to be used in testing the control system, as shown in claim 11, Miller et al. teach that the simulator responds to control signals with appropriate parameter signals (col. 3, lines 24-43).

Allowable Subject Matter

9. Claims 2-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 12 and 13 would be allowable if claim 12 was amended to correct the minor informality in the claim.

11. The following is a statement of reasons for the indication of allowable subject matter: None of the prior art teaches a method for training process operators that includes providing a plant comprising a human machine interface to a control system coupled to plant sensors and actuators and controlling a process, disconnecting all the sensors and actuators from the control system, connecting a simulator to the control system in place of the sensors and actuators and causing the simulator to simulate plant events, as shown in claim 12.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Schager (US Patent No. 3,237,318) teaches simulating the operation of an electrical power plant in a training device.

McClanahan (US Patent No. 4,613,952) teaches a simulator for an industrial plant for training.

Sawyer et al. (US Patent No. 4,640,812) teach a nuclear system test simulator.

Koyama et al. (US Patent No. 5,315,502) teach plant operation support with a body of simulation data.

Willafys et al. (US Patent No. 5,436,855) teach simulating an industrial process.

Engdahl (US Patent No. 6,282,4550) teach a walk-through human/machine interface.

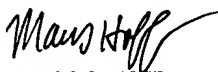
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manuel L. Barbee whose telephone number is 571-272-2212. The examiner can normally be reached on Monday-Friday from 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on 571-272-2216. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2857

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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